

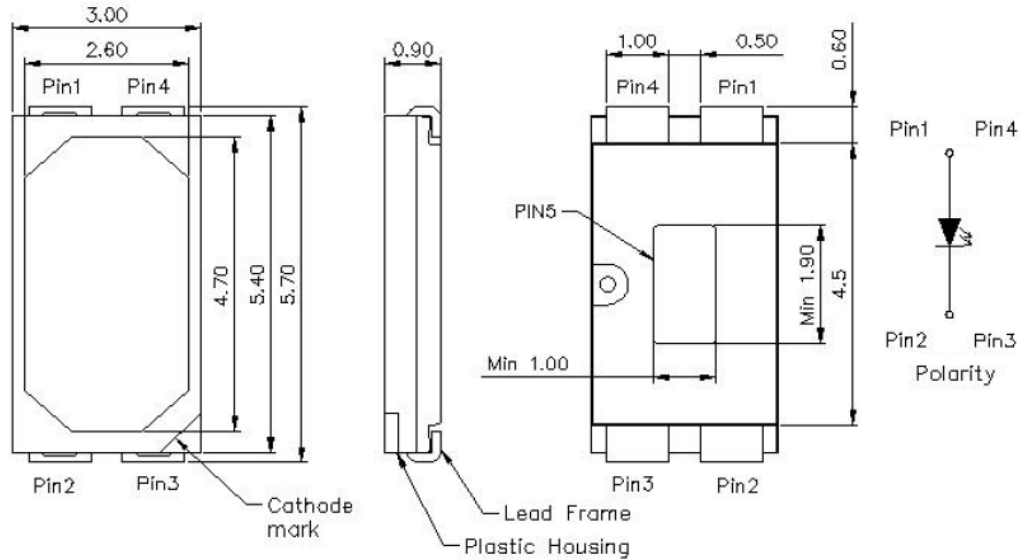


American Opto Plus LED Corp.

L963H-MPGC-TR

5.7 x 3.0 x 0.9mm Pure Green SMD LED

MECHANICAL DIMENSIONS



Notes:

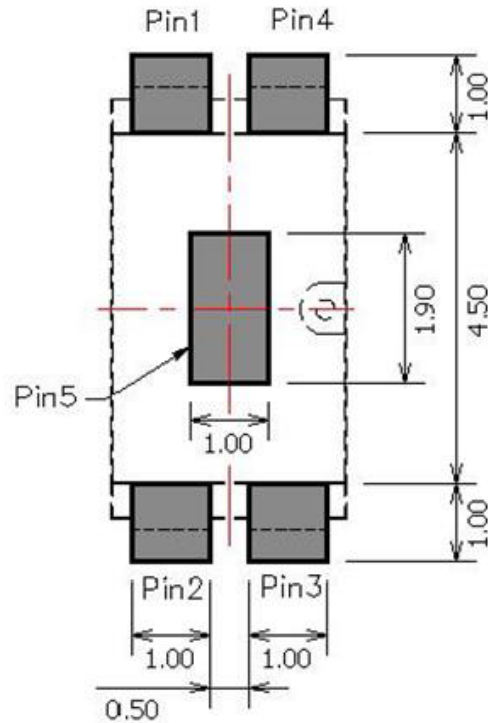
1. Dimension in millimeter[inch], tolerance is ± 0.1

| Chip Material | Emitted Color | Resin |
|---------------|---------------|----------|
| InGaN | Pure Green | Silicone |



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SOLDERING PATTERN



Note: Soldering terminals may shift in the Wd direction.



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ABSOLUTE MAXIMUM RATING

(Ta=25°C)

| Parameter | Symbol | Rating | Unit |
|-----------------------|-----------|------------|------|
| Power Dissipation | P_D | 525 | mW |
| Forward Current | I_F | 150 | mA |
| Pulse Forward Current | I_{FP} | 200 | mA |
| Reverse Voltage | V_R | 5 | V |
| Operating Temperature | T_{OPR} | -40 ~ +100 | °C |
| Storage Temperature | T_{STG} | -40 ~ +100 | °C |

Notes: Condition for I_{FP} is pulse of 1/10 duty and 0.1msec width

ELECTRO-OPTICAL CHARACTERISTICS

(Ta=25°C)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|------------------------------|-----------------|-------------|------|------|------|---------|
| Forward Voltage | V_F | $I_F=150mA$ | -- | 3.3 | 3.7 | V |
| Peak Emission Wavelength | λ_p | | -- | 523 | -- | nm |
| Dominant Wavelength | λ_d | | -- | 525 | -- | nm |
| Spectrum Radiation Bandwidth | $\Delta\lambda$ | | -- | 20 | -- | nm |
| Viewing Angle | $2\theta_{1/2}$ | | -- | 120 | -- | deg |
| Luminous Intensity | I_v | | -- | 35 | -- | lm |
| Reverse Current | I_R | $V_r=5V$ | -- | -- | 10 | μA |



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LUMINOUS INTENSITY (lm) BIN **(IF=150mA)**

| Color | Bin Code | Spec. Range |
|------------|----------|----------------|
| Pure Green | PP | 23.5 ~ 30.6 lm |
| | PQ | 30.6 ~ 39.8 lm |
| | PR | 39.8 ~ 51.7 lm |

Notes: It maintains a tolerance of $\pm 10\%$ on luminous intensity

DOMINANT WAVELENGTH (Wd) BIN **(IF=150mA)**

| Color | Bin Code | Spec. Range |
|------------|----------|------------------|
| Pure Green | A | 515.0 ~ 520.0 nm |
| | B | 520.0 ~ 525.0 nm |
| | C | 525.0 ~ 530.0 nm |
| | D | 530.0 ~ 535.0 nm |

Notes: It maintains a tolerance of Wd ± 1.0 nm

FORWARD VOLTAGE (Vf) BIN **(IF=150mA)**

| Color | Bin Code | Spec. Range |
|------------|----------|-------------|
| Pure Green | G8 | 2.7 ~ 2.9 V |
| | H7 | 2.9 ~ 3.1 V |
| | H8 | 3.1 ~ 3.3 V |
| | J7 | 3.3 ~ 3.5 V |
| | J8 | 3.5 ~ 3.7 V |

Notes: It maintains a tolerance of ± 0.05 V on forward voltage measurements



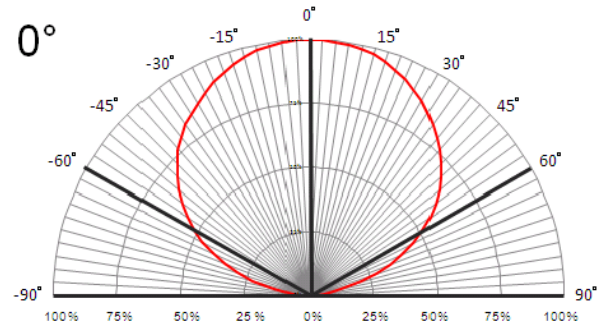
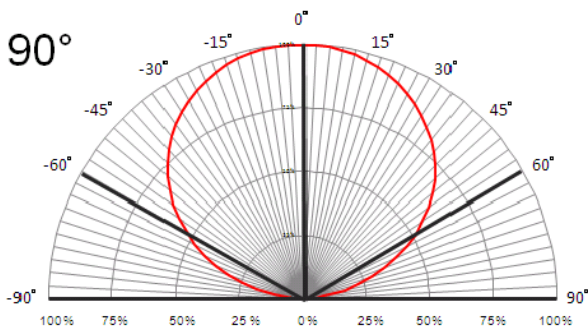
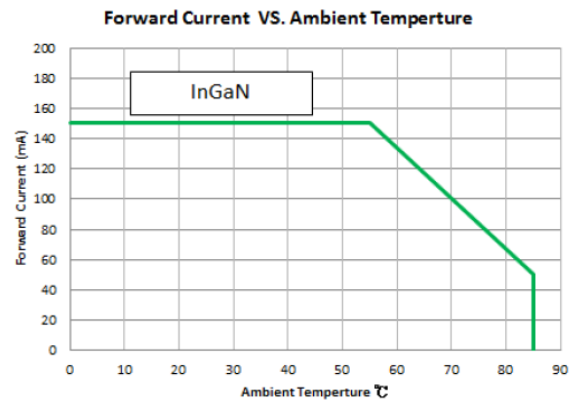
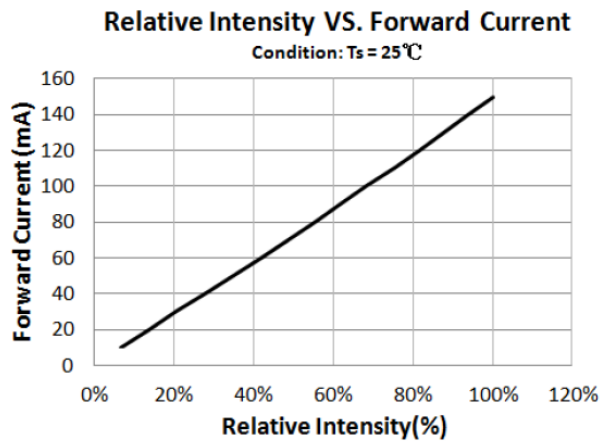
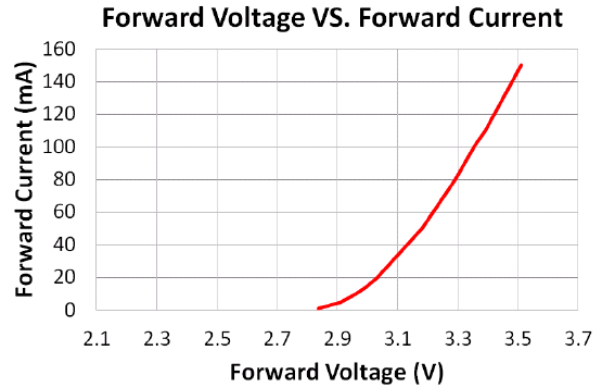
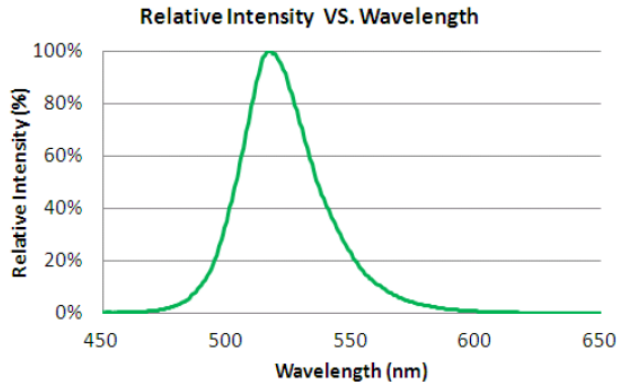
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ELECTRICAL/OPTICAL CHARACTERISTICS CURVES

(Ta=25°C)





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PRECAUTION FOR USE

1. The chips should not be used directly in any type of fluid such as water, oil, organic solvent, etc.
2. When the LEDs are illuminating, the maximum ambient temperature should be first considered before operation.
3. LEDs must be stored in a clean environment. A sealed container with a nitrogen atmosphere is necessary if the storage period is over 3 months after shipping.
4. The LEDs must be used within 72hrs after unpacked. Unused products must be repacked in an anti-electrostatic package, folded to close any opening and then stored in a dry and cool space.
5. The appearance and specifications of the products may be modified for improvement without further notice.
6. The LEDs are sensitive to the static electricity and surge. It is strongly recommended to use a grounded wrist band and anti-electrostatic glove when handling the LEDs. If a voltage over the absolute maximum rating is applied to LEDs, it will damage LEDs. Damaged LEDs will show some abnormal characteristics such as remarkable increase of leak current, lower turn-on voltage and getting unlit at low current.



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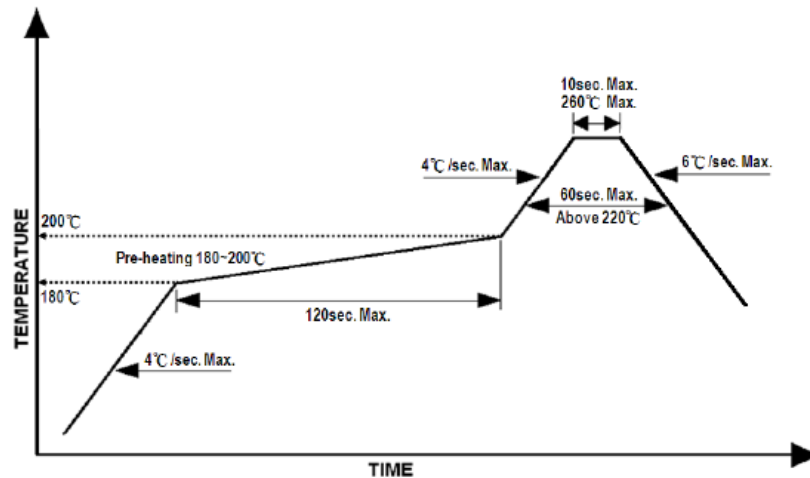
SOLDERING CHARACTERISTICS

Reflow Soldering Profile

Recommend soldering paste specifications:

1. Operating temp: Above 220°C, 60 sec
2. Peak temp: 260°C Max, 10 sec Max
3. Reflow soldering should not be done more than two times
4. Never attempt next process until the component is cooled down to room temperature after reflow
5. The recommended reflow soldering profile (measured on the surface of the LED terminal) is as followed:

Lead-free Solder Profile



Reworking

1. Rework should be completed within 5 seconds under 260°C
2. The iron tip must not come in contact with the copper foil
3. Twin-head type is preferred

Cleaning

Following are cleaning procedures after soldering:

1. An alcohol-based solvent such as isopropyl alcohol (IPA) is recommended
2. Temperature x Time should be 50°C x30sec or <30°C x3min
3. Ultrasonic cleaning: < 15W/ bath; bath volume ≤ 1 liter
4. Curing: 100°C max, <3min

Cautions of Pick and Place

1. Avoid stress on the resin at elevated temperature
2. Avoid rubbing or scraping the resin by an object
3. Electric-static may cause damage to the component. Please ensure that the equipment is properly grounded. Use of an ionizer fan is recommended

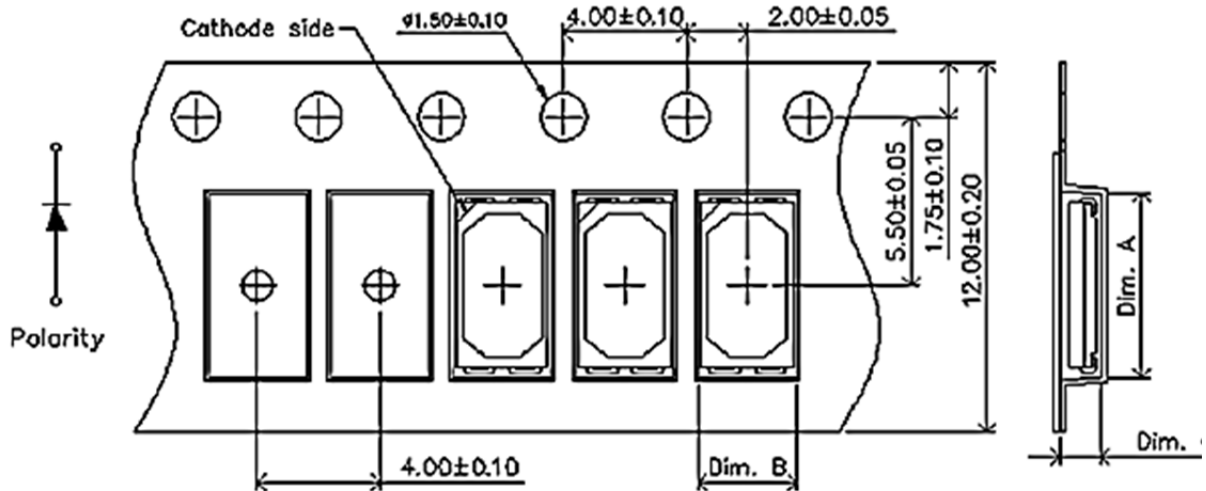


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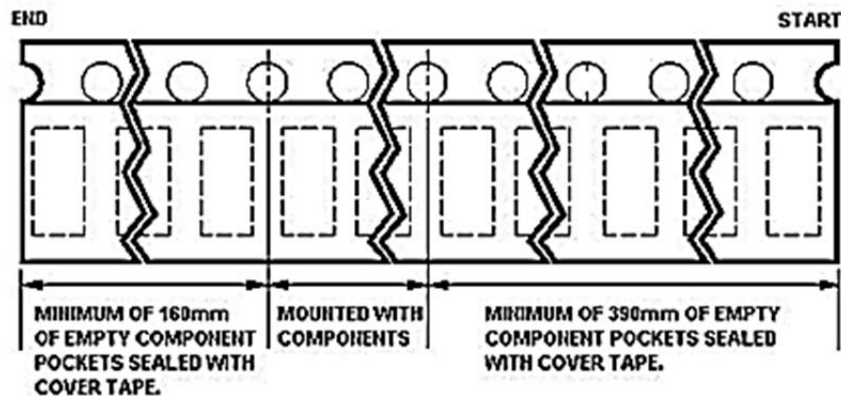
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PACKAGING & TAPE DIMENSION



| Part No. | Dim. A | Dim. B | Dim. C | Q'ty/Reel |
|----------|----------|----------|----------|-----------|
| | 6.0±0.10 | 3.2±0.10 | 1.1±0.10 | 2K |

Unit: mm



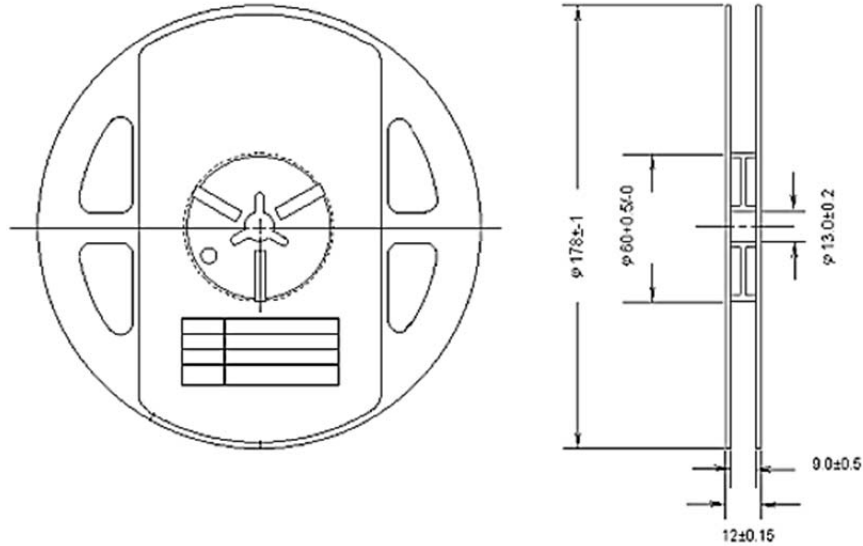


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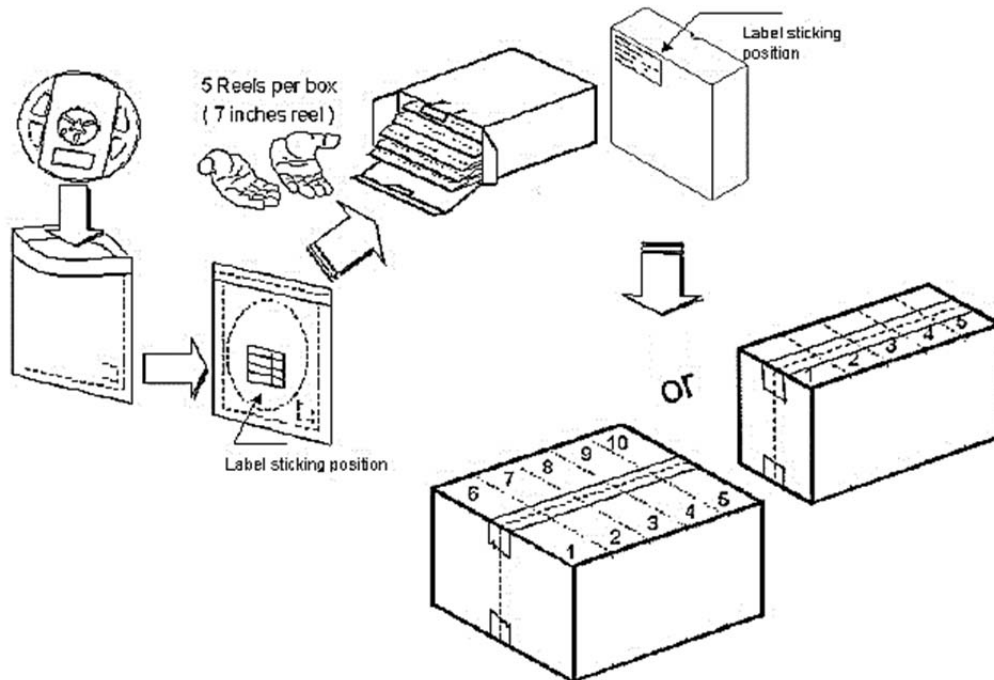
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REEL DIMENSIONS



PACKING & LABEL DIMENSIONS



Notes: 5 or 10 boxes per carton is available depending on shipment quantity



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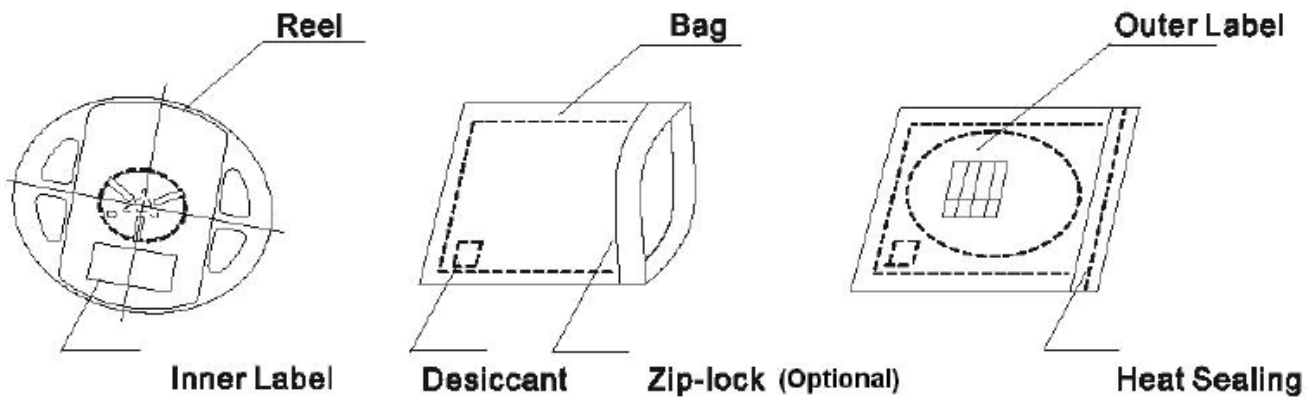
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DRY PACK

All SMD optical devices are MOISTURE SENSITIVE. Avoid exposure to moisture at all times during transportation or storage. Every reel is packaged in a moisture protected anti-static bag. Each bag is properly sealed prior to shipment.

Upon request, a humidity indicator will be included in the moisture protected anti-static bag prior to shipment.

The packaging sequence is as follows:



BAKING

Baking before soldering recommended when the package has been unsealed for 72hrs. The conditions are as followed:

1. $60\pm 3^{\circ}\text{C}$ x (12~24hrs) and $<5\% \text{RH}$, taped reel type
2. $100\pm 3^{\circ}\text{C}$ x (45mins~1hr), bulk type.
3. $130\pm 3^{\circ}\text{C}$ x (15min~30min), bulk type.

PRECAUTIONS

1. Avoid exposure to moisture at all times during transportation or storage.
2. Anti-Static precaution must be taken when handling GaN, InGaN, and AlInGaP products.
3. It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage beyond the specified limit.
4. Avoid operation beyond the limits as specified by the absolute maximum ratings.
5. Avoid direct contact with the surface through which the LED emits light.
6. If possible, assemble the unit in a clean room or dust-free environment.



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HANDLING OF SILICONE RESIN LEDS

Handling Indications

During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be used to pierce the sealing compound.



Figure 1

In general, LEDs should only be handled from the side. By the way, this also applies to LEDs without a silicone sealant, since the surface can also become scratched.

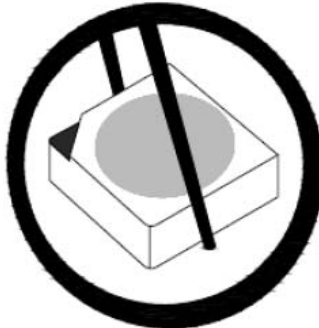


Figure 2

When populating boards in SMT production, there are basically no restrictions regarding the form of the pick and place nozzle, except that mechanical pressure on the surface of the resin must be prevented.